

# United States Patent [19]

Wetterlin et al.

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## [54] DEVICE IN POWDER INHALATORS

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### Related U.S. Application Data

[63] Continuation of Ser. No. 19,057, Feb. 26, 1987, abandoned.

### [30] Foreign Application Priority Data

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[51] Int. Cl.<sup>4</sup> ..... A61M 15/00

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128/200.18

[58] Field of Search ..... 128/200.18, 200.21,  
128/203.12, 203.15, 203.22-203.24, 204.13;  
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### [56] References Cited

#### U.S. PATENT DOCUMENTS

1,309,597 7/1919 Parker ..... 239/489  
1,431,177 10/1922 Palmer ..... 128/203.22  
2,604,094 7/1952 Miller et al. .... 128/203.15  
2,674,999 4/1954 Cox .  
2,804,341 8/1957 Bete ..... 239/501  
4,014,470 3/1977 Burnham ..... 239/487 X

4,147,166 4/1979 Hansen ..... 128/203.15  
4,353,365 10/1982 Hallworth et al. .... 128/203.15  
4,446,862 5/1984 Baum et al. .... 128/203.15  
4,524,769 6/1985 Wetterlin ..... 128/203.15  
4,570,630 2/1986 Elliott et al. .... 128/203.15

### FOREIGN PATENT DOCUMENTS

2152819 8/1985 United Kingdom ..... 128/203.15

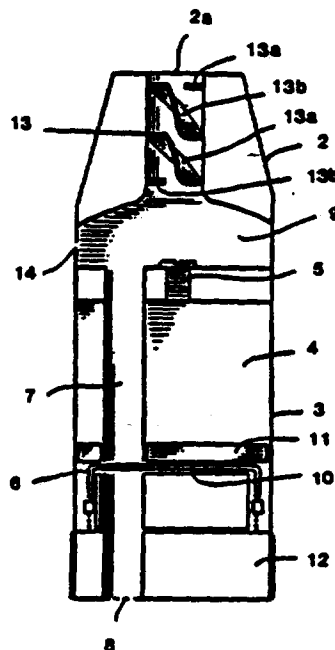
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### [57] ABSTRACT

Device in a previously known powder inhalator intended for inhalation of an air flow which contains pharmacologically active compound in micronized form. The powder inhalator comprises a nozzle unit (2) with a nozzle aperture (2a) as well as a container unit (3) with a releasing or dosing unit (6) for delivering the active compound. The air flow generated by inhalation is at least partly aspirated through an air conduit (7) located in the container unit (3), which conduit extends from an air inlet (8), communicating with the environment, via said releasing or dosing unit (6), up to said nozzle unit (2). According to the invention, deflector devices are stationarily arranged in the container unit (3) and/or in the nozzle unit (2), said deflector devices, for example in the shape of a helical channel portion (13), being arranged to create a powerful deflecting movement for the purpose of disrupting said powder particles into the respirable particle size distribution (less than 5  $\mu$ m).

10 Claims, 5 Drawing Sheets



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